Stoller
Grand Junction Office established 1959

299-E13-60 (A5875)
Log Data Report

Borehole Information:

Borehole:	299-E13-60 (A5875)		Site:	216-B-33 Trench	
Coordinates (WA St Plane)		GWL[1] (ft):	Not applicable	GWL Date:	06/11/03
North (m)	East (m)	Drill Date	Ground Level Elevation (ft)	Total Depth (ft)	Type
134282.465	573088.101	09/82	741.23	49.0	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded Steel	2.25	8 5/8	8.0	5/16	+2.25	unknown

Borehole Notes:

The logging engineer measured the 8-in. outside casing diameter with a caliper. Inside diameters for the 6-in. casing and the caliper were measured using a steel tape; measurements were rounded to the nearest 1/16 in. Casing thickness was calculated. Casing stickup was measured using a steel tape. Logging reference is the top of casing. Coordinates and elevation were derived from HWIS[2].

A 2-ft by 8-in. round grout seal surrounds the casing at the ground surface. Prior to logging an HPT swabbed the borehole and no contamination was detected.

Logging Equipment Information:

Logging System:	Gamma 2E		Type:	SGLS (70%) SN: 34TP40587A
Calibration Date:	03/03	Calibration Reference:	GJO-2003-430-TAC	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	3	4	
Date	06/23/03	06/23/03			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	49.0	8.0			
Finish Depth (ft)	3.0	3.0			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A[3]	N/A			
Pre-Verification	BE045CAB	BE045CAB			
Start File	BE046000	BE046047			

Log Run	1	2 Repeat	3	4	
Finish File	BE046046	BE046052			
Post-Verification	BE046CAA	BE046CAA			
Depth Return Error (in.)	0	0			
Comments	No fine-gain adjustment.	No fine-gain adjustment.			

Logging Operation Notes:

Spectral gamma logging was performed in this borehole June 23, 2003. Logging was conducted with a centralizer on the sonde. Logging data acquisition is referenced to the top of casing. A repeat section was collected in this borehole to evaluate system performance.

Analysis Notes:

Analyst:	Henwood	Date:	07/25/03	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging system were performed before and after data acquisition. The acceptance criteria were met.

A casing correction for 0.3125-in.-thick casing was applied to the log data.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G2EMar03.xls using efficiency functions and corrections for casing, water, and dead time as determined from annual calibrations. Dead time and water corrections were not necessary.

Log Plot Notes:

Separate log plots are provided for the man-made radionuclides (^{137}Cs and ^{60}Co) detected in the borehole, naturally occurring radionuclides (^{40}K, ^{238}U, ^{232}Th [KUT]), a combination of man-made, KUT, and dead time, and total gamma plotted with dead time. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, casing corrections, or water corrections. A repeat log section is also included.

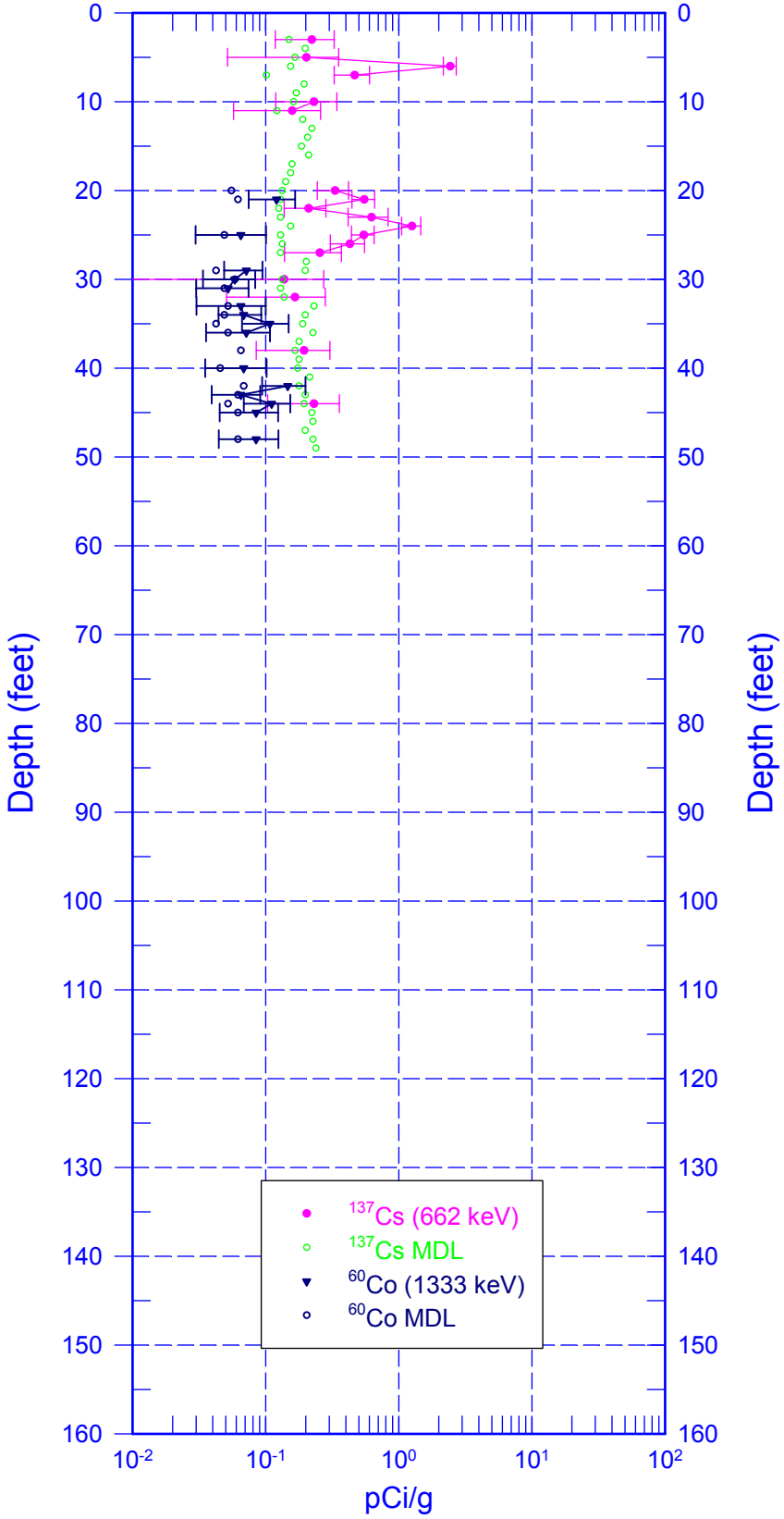
Results and Interpretations:

^{137}Cs and ^{60}Co were the only man-made radionuclides detected in this borehole. ^{137}Cs was detected at locations throughout the borehole with a maximum concentration of approximately 2.5 pCi/g at 6 ft. ^{60}Co was detected near its MDL of approximately 0.07 pCi/g between 20 and 48 ft. The borehole apparently was not drilled deep enough to penetrate all the contamination.

The repeat section indicates good agreement of the naturally occurring KUT.

[1] GWL – groundwater level
[2] N/A – not applicable
[3] HWIS – Hanford Well Information System

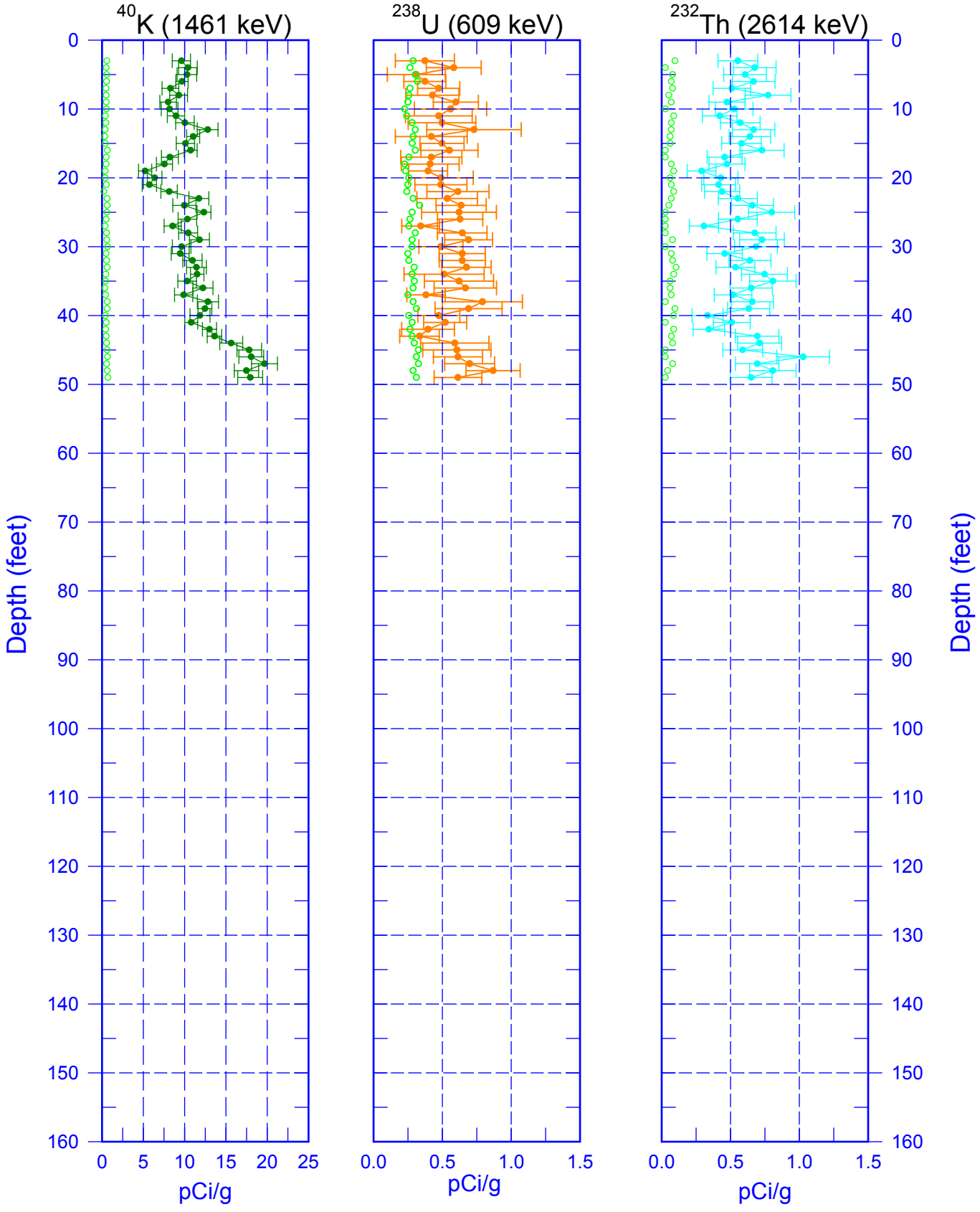
299-E13-60 (A5875)
Man-Made Radionuclides



Zero Reference - Top of Casing

Last Log Date - 06/23/03

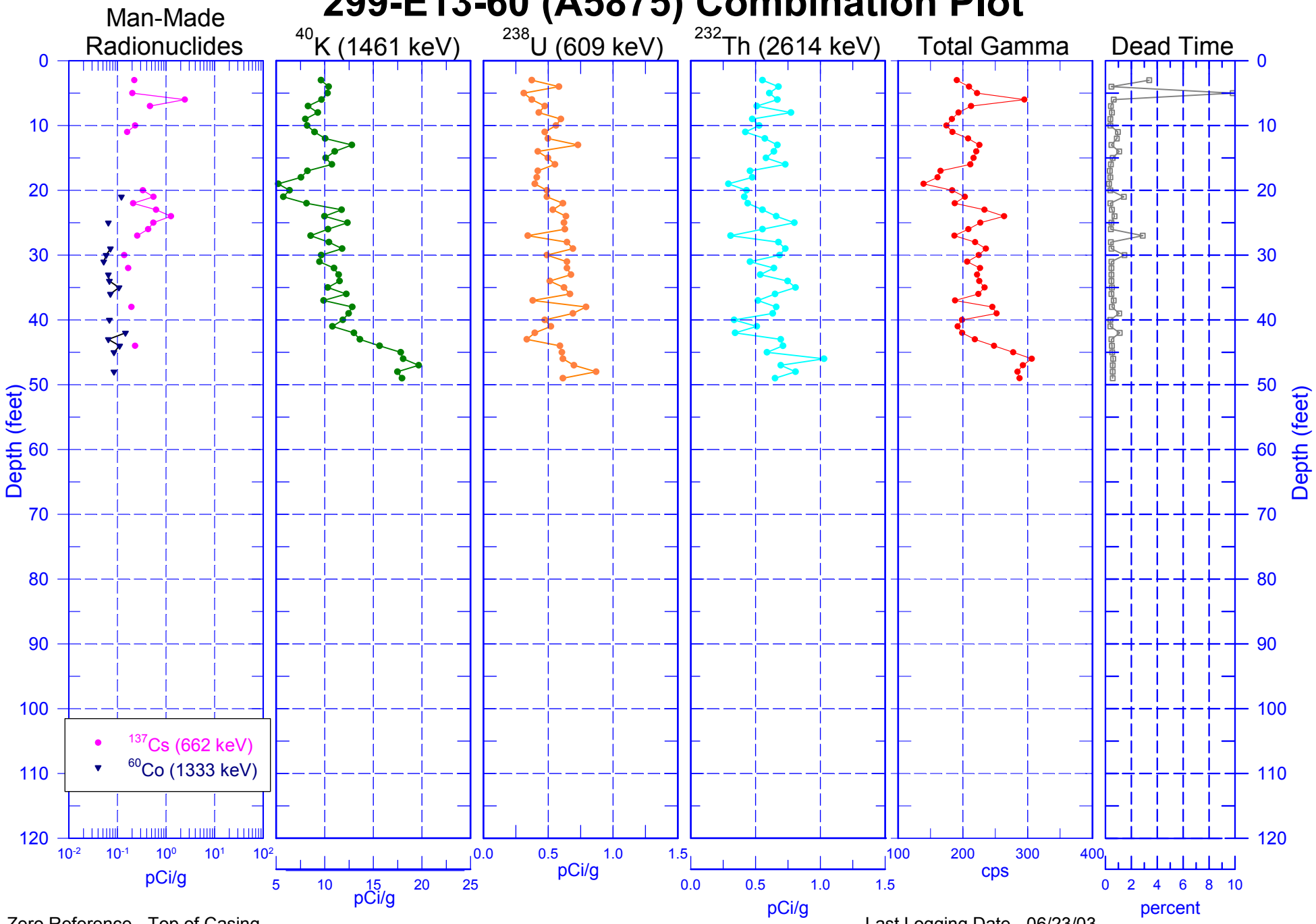
299-E13-60 (A5875)
Natural Gamma Logs



Zero Reference = Top of Casing

Last Log Date - 06/23/03

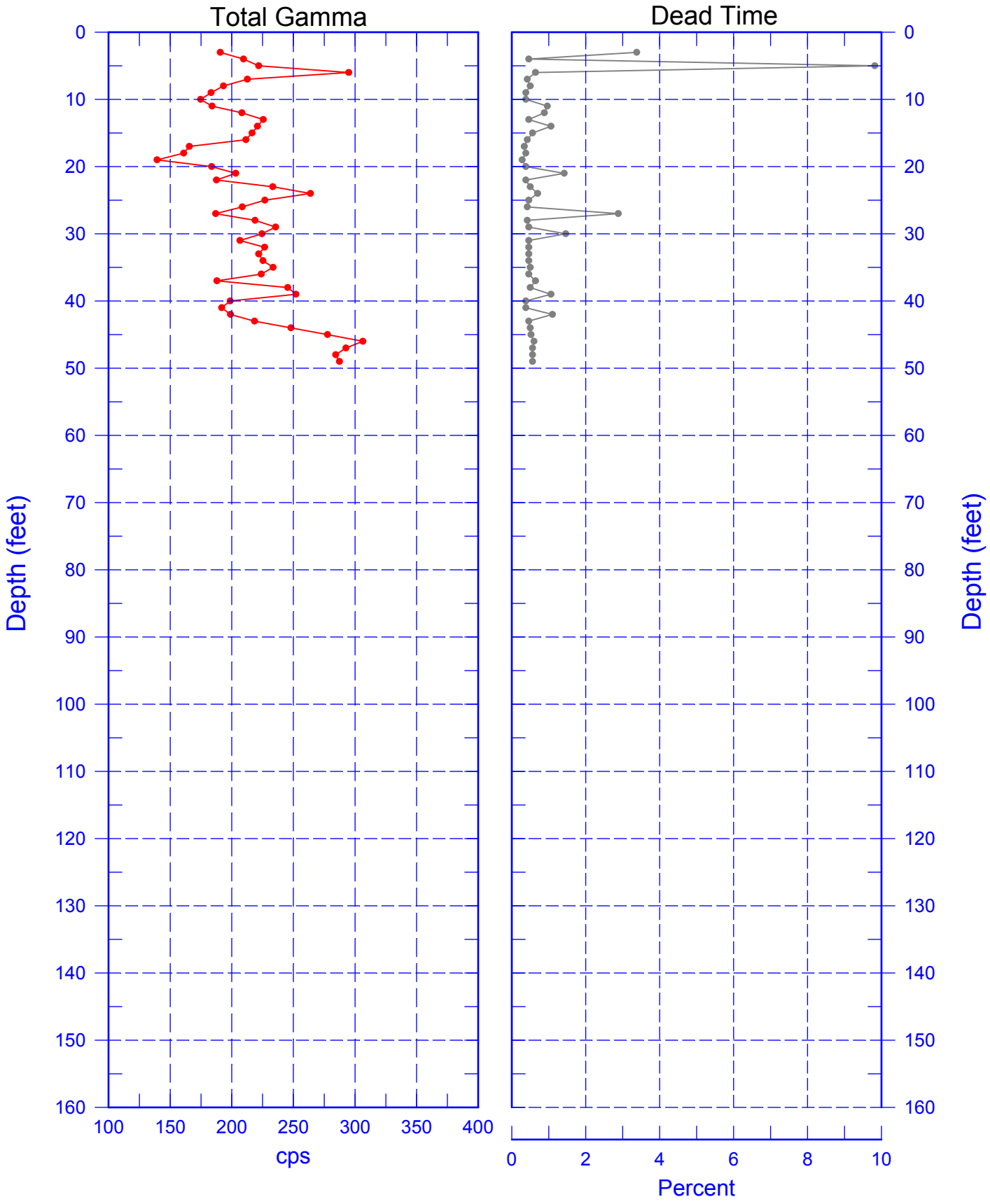
299-E13-60 (A5875) Combination Plot



Zero Reference - Top of Casing

Last Logging Date - 06/23/03

299-E13-60 (A5875)
Total Gamma & Dead Time

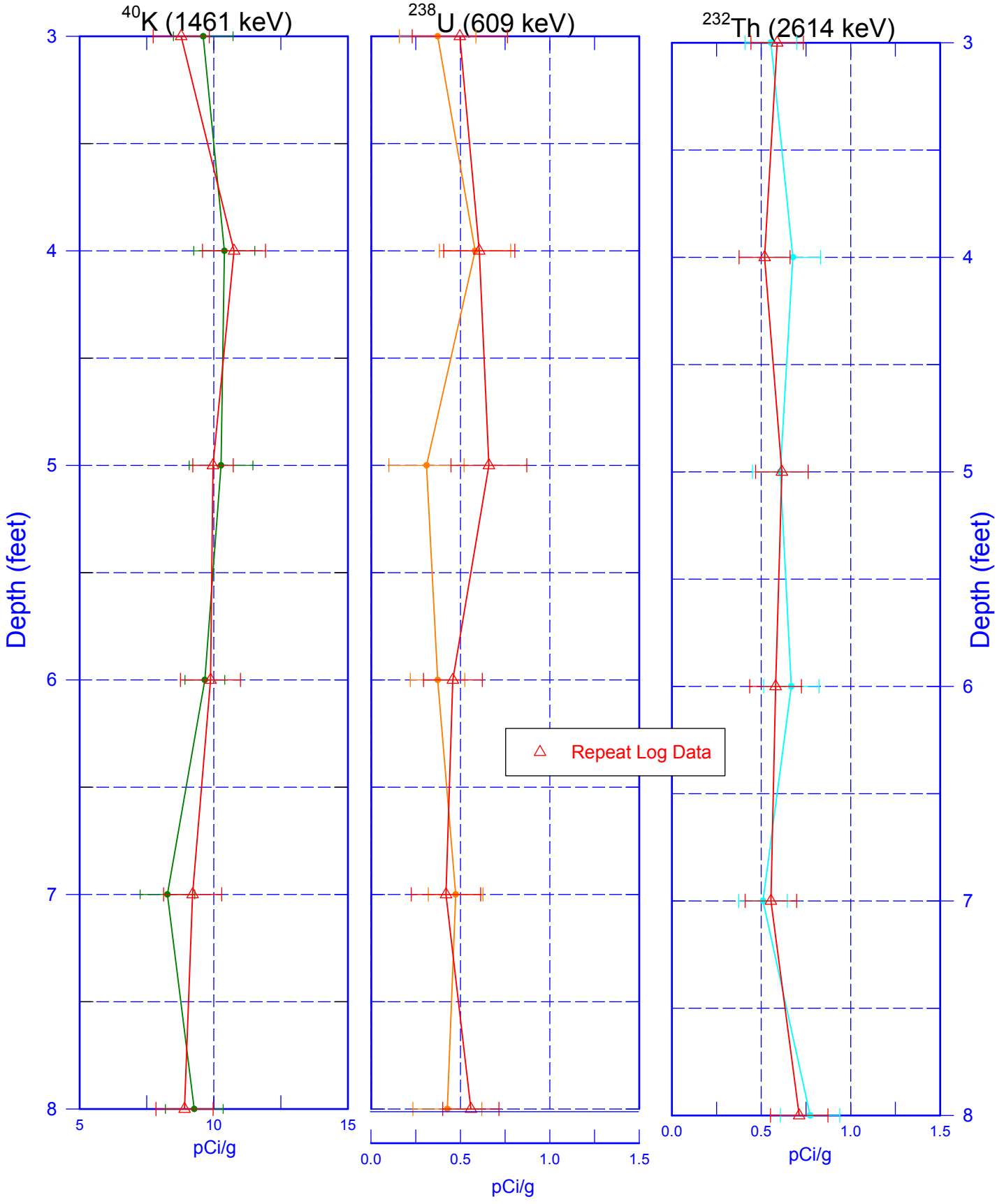


Reference - Top of Casing

Last Log Date - 06/23/03

299-E13-60 (A5875)

Repeat Section of Natural Gamma Logs



Zero Reference - Top of Casing

Last Log Date - 06/23/03